



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
CHEMICAL SAFETY AND  
POLLUTION PREVENTION

**MEMORANDUM:**

**To:** Richard Gebken

**From:** Dee Colby, Ph.D., Entomologist

**Secondary Review:** Jennifer Saunders, Ph.D., Senior Biologist

**Date:** March 19, 2017

**Subject:** PRODUCT PERFORMANCE DATA EVALUATION RECORD (DER)

**THIS DER DOES NOT CONTAIN CONFIDENTIAL BUSINESS INFORMATION**

**Note:** MRIDs found to be **unacceptable** to support label claims should be removed from the data matrix.

**DP barcode:** 445874

**Decision no.:** 537692

**Submission no:** 1012000

**Action code:** R340

**Product Name:** Diafil 610

**EPA Reg. No or File Symbol:** 73729-1

**Formulation Type:** WP

**Ingredients statement from the label with PC codes included:**

Silicon dioxide (85%) PC: 072605

**Application rate(s) of product and each active ingredient (lbs. or gallons/1000 square feet or per acre as appropriate; and g/m<sup>2</sup> or mg/cm<sup>2</sup> or mg/kg body weight as appropriate):** Product is applied as a dust or slurry: general indoor/outdoor application is 2-5 oz/100 ft<sup>2</sup>; mixed with stored grain at 1-7 lb/ton grain; over crops at 15-70 lb/A; litter treatment 4-75 lb/1000 ft<sup>2</sup>

**Use Patterns:** Kill and control of numerous flying/crawling arthropod pests, including those of public health concern, as a direct and/or residual application of treated substrates (e.g., walls, ceilings, floor, mattresses, carpet, furniture, building foundations, ant trails, etc.) for indoor/outdoor use in residential, commercial and livestock structures. Also on crops and in stored grain.

**I. Action Requested:** The registrant requested review of submitted data to support addition of mosquitoes, ticks and tobacco thrips to the label. In addition, the registrant is rearranging the label to list all labeled pests in categories.

**II. Background:** The registrant provided data to support product use against ticks, mosquitoes and tobacco thrips. The product currently has uses for direct contact and applications to indoor/outdoor surfaces including carpet, furniture, crack & crevice, and perimeter treatments, etc. against numerous arthropod pests, including: fleas, cockroaches, house flies, mites, centipedes, bed bugs, and spiders.

**III. MRID Summary:**

**MRID 50438901.** Robinson, K. (2017) Product performance on the application of diatomaceous earth for mosquito control for the label amendment of Diafil 610/Celite 610, Reg. No 73729-1. General considerations for efficacy of invertebrate control agents (810.3000); mosquito, black fly, and biting midge (sand fly) Treatments (810.3400); premises treatments (810.3500)

(1) non-GLP

(2) **Methods:** This MRID appears to be written as a proposal to screen test the performance of “3 commercially available products representing extremes in diatomaceous earth (DE) morphology and physical characteristics” when applied to adhesive treated bed nets for use against mosquitoes. These tests were proposed as part of the development of “a natural, physical mechanism to combat insecticide resistant mosquitoes as an additional, complementary strategy”. However, it appears that no insecticide resistant mosquitoes were tested. Results for five tests are provided below. Some of the tests were not fully completed. All testing was conducted in a laboratory. Unfortunately, all products tested were listed in code and therefore showed no association to Diafil 610. An acrylic emulsion was topically applied onto mosquito netting then allowed to air dry for 2 hours. A resin binder was applied to bed netting followed by application of one of the three DE products to be tested: ND086, ND087, ND088. The amount of product applied (i.e. rate) to each net was not provided.

Test 1: Evaluate efficacy of bed nets under static conditions & in the presence of host cues using cone bioassay procedure.

Bed nets were supposed to be evaluated under static conditions (no host or no host cues, worst case scenario with minimal interaction with bed net, and in the presence of host cues (human breath introduced into the test area by blowing once every 30 min for 7 hours to mimic host cues during a normal sleep period). An acrylic emulsion was topically applied onto the mosquito netting then allowed to air dry for 2 hours. Controls in this test were untreated bed net and adhesive binder-treated bed net. Tests were conducted with 25 adult female *Anopheles gambiae* per container and 6 replicates per DE product. The amount of time that mosquitoes were exposed to treated bed netting was not included. The test was conducted at 27 °C and ~35% RH. Data were presented for LT<sub>50</sub> and LT<sub>80</sub> for each treatment. Raw data for mortality counts were not provided.

Test 2: Evaluate efficacy of best performing bed net(s) using NSCU *in vitro* membrane testing procedure.

The best performing DE treated bed nets from the cone bioassay testing (i.e., ND088) were to be evaluated using an *in vitro* membrane feeding system. However, results are instead presented for a cone bioassay high humidity test, which the Reviewer is designating as Test 3, for clarity.

Test 3: Cone bioassay high humidity (and temperature) test.

Twenty-five female, *A. gambiae* were tested in each of six replicate bioassays for the ND088 treated bed nets. The control was adhesive coated net only. Exposure times were not provided. Tests were conducted at 27 °C and 35% RH and 32 °C and 75-80% RH. Endpoints were LT<sub>50</sub> and LT<sub>80</sub> times to mortality.

Test 4: Cone bioassay ovipositional cycle.

Twenty-five female, *A. gambiae* were tested in each of six replicate bioassays for the ND088 treated bed nets. Oviposition Cycle I included young mosquitoes that have not blood fed. Oviposition Cycle II included mosquitoes that had blood fed once and laid eggs and where host seeking at the time of the test. The control was adhesive coated net only. Exposure times were not provided. Tests were conducted at 27 °C and 35% RH. Endpoints were LT<sub>50</sub> and LT<sub>80</sub> times to mortality.

Test 5: Cage screen bioassay.

Twenty-five female, *A. gambiae* were tested in each of six replicate bioassays for the ND088 treated bed nets. The control was just stated as “control”. Exposure times were overnight (i.e., 16 hr). Tests were conducted at 27 °C and 35% RH. Mortality was compared between ND088 exposed and control mosquitoes.

(3) **Results:**

Test 1: Data presented showed that the product designated as ND088 performed slightly better than the other two products. No results for controls were shown. No statistical comparisons with controls were provided. The results presented did not fully address tests proposed in the study design. It appears that the test to include host cues was not

conducted or results were not included.

Test 2: No results. It appears that the test for *in vitro* membrane testing was not conducted or results were not included.

Test 3: LT<sub>50</sub> and LT<sub>80</sub> data showed that *A. gambiae* died sooner when tested at 27 °C and 35% RH, at approximately 3 hr and 4 hr for LT<sub>50</sub> and LT<sub>80</sub>, respectively than 32 °C and 75-80% RH, at 4hr and 5 hr, respectively. One of the graphs showed some mortality within controls in the low temperature/RH test, but it is not possible to see the exact percentage. It appears that it was less than 10%.

Test 4: While not stated, the results for both young and older mosquitoes appear to be similar; the LT50 for both was < 3 hr and the LT80 for both was approx. 4 hr. One of the graphs showed some mortality within controls in the low temperature/RH test, but it is not possible to see the exact percentage. It appears that it was less than 10%.

Test 5: The results are stated as, “~ 90% overnight mortality when mosquitoes had choice of 1:5 treated:untreated”. That statement does not make sense based on the little information that was provided for the study description; it was not a choice test. The graph shows considerable mortality within controls possibly in excess of 10%. Tabular data was not included.

(4) **Conclusion:** This MRID is **unacceptable** to support kills and controls claims for mosquitoes exposed to Diafil 610 (EPA Reg. No. 73729-1). Product specific data was not provided. The relationship between the products tested and Diafil 610 was not provided. Coating bed nets with an adhesive resin for application of DE product is not consistent with the label directions for use. Exposure times were not included for any of the tests conducted, except Test 5 which was a 16 hr exposure period. Flying pests should be exposed to treated panels for no more than 1 hour. After the exposure period, the pests should be transferred to clean, untreated containers for further observation and evaluation. Containers should be stored under ambient test site conditions. Also, for the product to be considered efficacious ≥ 90% mortality should be observed within 96 hr post-treatment, provided that ≤10% mortality occurs in controls. In these studies, the selected endpoints (i.e., LT<sub>50</sub> and LT<sub>80</sub>) were not appropriate for an efficacy determination, and it was not possible to know if mortality in controls remained at acceptable levels because tabular results were not included for controls. While these studies did include controls, the results in treatments were not adjusted to account for mortality within controls. To obtain approval for any labeling claims against mosquitoes, acceptable efficacy data should be provided for the following three genera (*Culex*, *Aedes*, and *Anopheles*) of mosquitoes: Testing of one of the following *Culex* species should be performed: *C. pipiens*, or *C. quinquefasciatus*, or *C. tarsalis*. Testing of one of the following *Aedes* species should be performed: *Ae. albopictus*, or *Ae. aegypti*. Testing of one of the following *Anopheles* species should be performed: *An. albimanus*, or *An. quadrimaculatus*, or *An. freeborni*, or *An. punctipennis*, or *An. gambiae*, or *An. stephensi*. Testing of the specified three mosquito genera ensures that there are supporting data against the major disease vectors in these groups. Consumers are likely unable to distinguish between the individual species, and therefore requiring data on major vectors is necessary to ensure pesticide products are effective against species that may pose risks to public health.

There were several items in this MRID that were actually not included beyond the first mention, such as:

- 1) testing of black fly and biting midge (sand fly) as in the title of the study,
- 2) testing of insecticide resistant mosquitoes,
- 3) cone testing with host cues (part of Test 1), and
- 4) testing using an *in vitro* membrane feeding system (all of Test 2).

**MRID 50438902** Robinson, K. (2017) Product performance on mechanical ticks repellent for the label amendment of Diafil 610/Celite 610, Reg. No 73729-1, report on kill and repellency efficacy of mechanical ticks repellent.

(1) non-GLP

(2) **Methods:** Product-specific laboratory trials were conducted to assess the efficacy of Diafil 610 applied as a surface treatment (dust and baked-on slurry) against a laboratory colony of ticks. The WHO Protocol for Lab and Field trials – Testing the efficacy of Household insecticide products was utilized. The equipment used were aluminum trays (26 cm x 20 cm x 4cm, each) and a brick structure. Eight adult individuals were tested. Though not

stated, it is assumed that 8 individuals were tested for each treatment. The species of ticks tested was not specified. No moisture was provided to the ticks during the study; it was assumed from described rearing techniques that adult ticks were provided a bloodmeal prior to treatment exposure. The number of replicates/treatment including controls were not included in the study description. Ticks were continuously exposed to the treatments for up to 48 hr. before being removed to clean trays for the remainder of the study. Mortality was assessed every 24 hr until day 6 post-treatment or 100% mortality of ticks.

**Slurry application:** The inside surfaces of aluminum trays were abraded using a steel wool pad. A 10% slurry was applied as a fine spray to the trays so that 4.44ml of solution was used for the total area 0.0888 m<sup>2</sup>, to meet the dosage of 5g/m. The tray was oven dried to 50 C (122 °F). Insects were prevented from escaping by closing the trays with foil or lid.

**Dust application:** The inside surfaces of aluminum trays were abraded using a steel wool pad. Trays were then placed on a digital balance. Dust was applied through sieve to give an even coating to the base, as determined visually, until the desired application weight is adopted; 0.444 g of Diafil 610 per total area of 0.0888 m<sup>2</sup>, to meet the dosage of 5g/m.

(3) **Results:** Mortality of ticks was 90% after 24 hr and 100% by 48 hr following continuous exposure to the dust treatment for 48 hr. Mortality of ticks was 70% after 24 hr and 100% by 48 hr following continuous exposure to the baked-on slurry treatment for 48 hr.

(4) **Conclusion:** This MRID is **unacceptable** to support kills and controls claims for ticks continuously exposed to Diafil 610 (EPA Reg. No. 73729-1) treated surfaces for 48 hr when in contact with dust or baked-on 10% slurry. Abrading the surface of the substrate, presumably for the product to adhere better, and baking of the slurry onto the substrate surface are not consistent with the label directions for use. Also, there was no indication of how the “brick structure” was incorporated into product testing. In addition, there were too few individuals used in the study (n = 8 ticks for each treatment); a balanced design of 5 replicates of 10 individuals per tick species per treatment and control groups should be tested. Individuals in control groups should be handled in the same manner as treated individuals, minus the treatment. Control mortality should remain ≤10% during the study. This study did not incorporate controls. A source of moisture should have been provided throughout the test. To obtain approval for any labeling claims against ticks, for products other than dog or cat products, efficacy data should be submitted for the following three ticks: blacklegged tick (*Ixodes scapularis*); lone star tick (*Amblyomma americanum*); and either American dog tick (*Dermacentor variabilis*) or brown dog tick (*Rhipicephalus sanguineus*). The species of tick tested in this study was not identified in the description provided.

An exposure period of 48 hr without access to harborage or transfer to a clean surface was unrealistic. For direct application studies (i.e., the specimen is treated directly with a pesticide), specimens should be transferred to clean containers as soon as practical. For residual application studies (i.e., a surface is treated with a pesticide and the specimen is subsequently exposed to the treated surface), such as this one, the specific pest and use pattern should be considered when determining the appropriate length of exposure of the specimen to the treated surface. Typically, exposure to the treated surface exceeding 4 hr is considered an unrealistic scenario unless, for example, the product is tested on eggs.

For a general indoor residual (i.e., control) claim, both a porous (e.g., unpainted, unfinished plywood) and a nonporous (e.g., linoleum or glazed ceramic tile) surface should be used. If mattresses, fabric or carpeting are included as a labeled site, efficacy data using cotton sheeting, mattress ticking and/or carpeting should also be provided.

For control claims on outdoor surfaces, on buildings, and perimeter/foundation treatments, a nonporous surface (e.g., vinyl siding or tile) and a porous surface (e.g., unpainted concrete) should be used. For outdoor residual claims on lawns, grass/turf plugs should be used. Substrates tested to support outdoor claims should be aged outside or should be aged inside with artificially simulated outdoor conditions (e.g., rain, UV light).

**MRID 50438903.** Robinson, K. (2016) Product performance on mechanical pesticides for tobacco thrips,

*Frankliniella fusca*, for the label amendment of Diafil 610/Celite 610, Reg. No 73729-1, for control in cotton.

This MRID was not reviewed for efficacy at this time, as the tobacco thrip is not considered a pest of public health concern.

#### IV. EXECUTIVE DATA SUMMARY:

(A) The submitted data do not support product performance of Diafil 610 against mosquitoes and ticks. To obtain approval for any labeling claims against mosquitoes, acceptable efficacy data should be submitted for the following three genera (*Culex*, *Aedes*, and *Anopheles*) of mosquitoes: Testing of one of the following *Culex* species should be performed: *C. pipiens*, or *C. quinquefasciatus*, or *C. tarsalis*. Testing of one of the following *Aedes* species should be performed: *Ae. albopictus*, or *Ae. aegypti*. Testing of one of the following *Anopheles* species should be performed: *An. albimanus*, or *An. quadrimaculatus*, or *An. freeborni*, or *An. punctipennis*, or *An. gambiae*, or *An. stephensi*. To obtain approval for any labeling claims against ticks, for products other than dog or cat products, efficacy data should be submitted for the following three ticks: blacklegged tick (*Ixodes scapularis*); lone star tick (*Amblyomma americanum*); and either American dog tick (*Dermacentor variabilis*) or brown dog tick (*Rhipicephalus sanguineus*). Testing of the specified mosquito and tick genera ensures that there are supporting data against the major disease vectors in these groups. Consumers are likely unable to distinguish between the individual species within mosquitoes and ticks, and therefore requiring data on major vectors is necessary to ensure pesticide products are effective against species that may pose risks to public health.

In addition, the data do not support kills or controls of mosquitoes and ticks when applied directly to the pest or when applied to a surface, for the following reasons:

- 1) Studies tested methods of application that are not consistent with the product's directions for use (e.g., use of an acrylic/resin adhesive or baking the slurry onto a substrate).
- 2) There were too few individuals used in tick studies (e.g., 8 ticks per treatment; no replication; no controls); typically, 5 replicates of 10 individuals each are tested per treatment/control group.
- 3) For the product to be considered efficacious,  $\geq 90\%$  mortality should be observed within 96 hr post-treatment; control mortality should remain  $\leq 10\%$  during the study. Therefore, LT50 and LT80 data (as with MRID 50438901, for mosquitoes) are not appropriate, but LT90 data would be suitable for efficacy studies.
- 4) There should be comparison of treatment data against controls. This was not the case in either mosquito or tick studies. Individuals in control groups should be handled in the same manner as treated individuals, minus the treatment.
- 5) It was not clear from the description the amount of time that mosquitoes were exposed to treated bed nets. Flying pests should be exposed to a treated surface for no more than 1 hr. Likewise with ticks, an exposure period of 48 hr without access to harborage or transfer to a clean surface was unrealistic. Specimens should be transferred to clean containers by 4 hr post-exposure.
- 6) For an indoor residual claim, both a porous and nonporous substrate should be tested. If mattresses, fabric, bed netting or carpeting are included as a labeled site, efficacy data using cotton sheeting, mattress ticking, bed netting and/or carpeting should also be provided. The tested site (e.g., bed netting) should be included on the label.
- 7) For control claims on outdoor surfaces, on buildings, and perimeter/foundation treatments, a nonporous surface (e.g., vinyl siding or tile) and a porous surface (e.g., unpainted concrete) should be used. For outdoor residual claims on lawns, grass/turf plugs should be used. Substrates tested to support outdoor claims should be aged outside or should be aged inside with artificially simulated outdoor conditions (e.g., rain, UV light).

#### V. LABEL RECOMMENDATIONS:

- 1) List changes to the directions for use. Specific changes to the DFU are included on the attached label, and include, in part:

adding the word "listed" consistently throughout the DFU and label when referring to insects, insect pests, and pests;  
including the exclusions for ants consistently throughout the DFU and label when referring to a general reference to ants (e.g., "to control ants (excluding fire, harvester, carpenter, and pharaoh ants)"); and  
adding the exclusion for non-public health pest mites in the DFU and label when referring to a general

reference to mites (e.g., “Mites (excluding dust, scabies, and dog follicle mites and chiggers)”), unless specifying “listed mites” or “plant parasitic mites” or exact names of listed mites, such as the clover mite.

(2) The following marketing claims are acceptable:

Claims for tobacco thrips

(3) The following marketing claims are unacceptable:

Kills and control claims for mosquitoes and ticks

(4) The following MRIDs should be removed from the data matrix, as they are classified as “unacceptable” to support the product: **50438901** and **50438902**

(5) Note to the PM: The registrant amended the label to propose groupings/categories of listed pests. Some issues included: incorrect spellings of pest names, an aquatic pest (fire worm) which looks like a centipede but isn't, and awkward groupings of individuals. Specific modifications suggested by the Reviewer are included on the attached label.



# MASTER LABEL

Primary Brand Name: Diafil® 610  
Alternate Brand Name: Celite® 610

## MECHANICAL INSECTICIDE

Effective and long lasting when kept dry.

### Kills the following:

**Weevils and other Beetles and Borers:** [Carrot Weevils](#), [Clover Weevils](#), [Pepper Weevils](#), [Rice Weevils](#), [Weevils](#).

12-spotted Cucumber Beetles, Asparagus Beetles, Bean Beetles, Blister Beetles, Boll Weevils, [Branch and Twig Borers](#), [Cadelles](#), Cigarette Beetle, Colorado Potato Beetles, Confused Flour Beetles, Cucumber Beetles, Dark Mealworms, Darkling Beetles (lesser meal worm), Dried Fruit Beetles, Drugstore Beetles, Elm Leaf Beetles, Flea Beetles, Japanese Beetles, Mealworms, Mexican Bean Beetles, [Pacific flatheaded borers](#), Pink bollworms, Red Flour Beetles, Saw Toothed Grain Beetles, [Shot hole borer](#), Spider Beetles, Western Yellow-striped Armyworms, Yellow Mealworms

**Moths, Butterflies, "Worms", Leafminers, Loopers and Caterpillars:** Angoumois Grain Moths, Artichoke Plume Moths, ~~Bagworms~~, Codling Moths, Diamondback Larvae and Moths, European Pine Tip Moths, Grape Leaf Skeletonizers, Gypsy Moths (adults & larvae), Indian Meal Moths, Moths, Mediterranean Flour Moths, [Orange Tortrix](#), [Skippers](#), Small Flying Moths, Tobacco Moths, Tussock Moths,

[Armyworms](#), [Bagworms](#) Beet Armyworms, [Cabbage Loopers](#), [Cross-striped Cabbageworms](#), [Cankerworms](#), [Caterpillars](#), [Corn Earworms](#), [Eastern Tent Caterpillars](#), [European Corn Borer](#), [Forest Tent Caterpillars](#), [Fruit worms](#), [Fruit tree Leaf rollers](#), [Hornworms](#), [Green Fruit Worms](#), [Heliothis spp.](#), [Imported Cabbageworms](#), [Leafminers](#), [Leafrollers](#), [Leaftiers](#), [Loopers](#), [Navel Orange worms](#), [Potato Tuber worms](#), [Saltmarsh caterpillars](#), [Tomato Budworms](#), [Tomato Fruit worms](#), [Tomato Hornworms](#), [Tomato pinworms](#), [Webworms](#),

**Flies, non-biting Gnats, Leaf miners and Maggots and Mosquitoes:** Apple Maggots, Blow Flies, Cabbage Maggots, [Cheese Skippers](#), Cherry Fruit Flies, Crane Flies, Fruit Flies, Fungus Gnats, [non-biting](#) Gnats, House flies, [Leaf miners](#), Maggots, ~~Mosquitoes~~, Mushroom Flies, Olive Fruit Flies, Onion Maggots, Shore flies, Vinegar Flies, Whiteflies

### Slugs

**"Bugs", Leafhoppers and other Insects as listed:** [Ants \(excluding Fire, Harvester, Carpenter and Pharaoh ants\)](#), Billbugs, Box Elder Bugs, [Chalcids](#), [Cockroaches](#), [Crickets](#), [Earwigs](#), Fleas, [Garden Symphylan](#), [Glassy Winged Sharpshooters](#), [Grape Leafhoppers](#), [Grasshoppers](#), Green stink bugs, Harlequin Bugs, [Katydid](#)s,

Lace Bugs, Leaf-footed plant bugs, [Leafhoppers](#), [Lygus spp.](#), [Millipedes](#), [Mirids](#), [Mole crickets](#), [Pear Psyllids](#), [Potato Leafhoppers](#), Proba bugs, [Psyllids](#), Tarnished Plant Bugs, ~~Ticks~~, Tomato bugs, [Sharpshooters](#), [Silverfish](#), [Skippers](#), [Springtails](#), Squash bugs, Stink Bugs, Southern chinch bugs, Sow bugs,

**Aphids, Scales, Mealybugs, Thrips and Mites (excluding dust, scabies, and dog follicle mites and chiggers):** [Aphids](#), [Armored Scales](#), [Clover Mites](#), [Eriophyid Mites](#), [Grain Mites](#), [Grape Mealy bugs](#), [Green Peach Aphids](#), [Greenhouse Thrips](#), [Mealy Bugs](#), [Tomato Russet Mite](#), [Scales](#), [Soft Scales](#), [Tobacco Thrips](#), [Vine mealy bugs](#)

**Commented [CD1]:** These categories are somewhat haphazard: Weevils are Beetles and since the larval 'worm' form (i.e. mealworms) has been included with this group, they should put the caterpillars in with the Moths, etc. I have provided an adjusted categorization. If the registrant prefers, they may propose a different grouping for review.

**Commented [CD2]:** Caterpillars and skippers are listed, which qualify for butterflies.

**Commented [CD3]:** Which caterpillars? There are threatened and endangered species of moths and butterflies in the U.S., so the registrant may want to be more specific or leave off the general "caterpillars".

**Commented [CD4]:** Bermudagrass mirid is not a common name; therefore, just Mirids.

**Commented [CD5]:** I suggest grouping these arthropods together since many homeowners would not distinguish between them due to their size.

### ACTIVE INGREDIENT:

Diatomaceous Earth, chemical composition consisting of:

Silicon Dioxide	85.0%
Other oxides and moisture	15.0%
<b>Total</b>	<b>100.0%</b>

Net Weight: \_\_\_\_\_ lbs.

EPA Reg. No. 73729-1

EPA Establishment No. 073729-NV-001  
EPA Establishment No. 073729-MEX-002  
Batch Code:

IMERYS MINERALS CALIFORNIA, INC.  
2500 MIGUELITO RD.  
LOMPOC CA 93436

## SUBLABEL A

Primary Brand Name: Diafil® 610  
Alternate Brand Name: Celite® 610

Effective and long lasting when kept dry.

### Kills the following:

**Beetles:** 12-spotted Cucumber Beetles, Asparagus Beetles, Bean Beetles, Blister Beetles, Boll Weevils, Cigarette Beetle, Colorado Potato Beetles, Confused Flour Beetles, Cucumber Beetles, Dark Mealworms, Darkling Beetles (lesser meal worm), Dried Fruit Beetles, Drugstore Beetles, Elm Leaf Beetles, Flea Beetles, Japanese Beetles, Mealworms, Mexican Bean Beetles, Pink bollworms, Red Flour Beetles, Saw Toothed Grain Beetles, Spider Beetles, Western Yellow-striped Armyworms, Yellow Mealworms

**Moths:** Angoumois Grain Moths, Artichoke Plume Moths, Bagworms, Codling Moths, Diamondback Larvae and Moths, European Pine Tip Moths, Grape Leaf Skeletonizers, Gypsy Moths (adults & larvae), Indian Meal Moths, Moths, Mediterranean Flour Moths, Small Flying Moths, Tobacco Moths, Tussock Moths,

**Weevils:** Carrot Weevils, Clover Weevils, Pepper Weevils, Rice Weevils, Weevils,

**Flies, non-biting Gnats, and Maggots and ~~Mosquitoes~~:** Apple Maggots, Blow Flies, Cabbage Maggots, Cherry Fruit Flies, Crane Flies, Fruit Flies, Fungus Gnats, non-biting Gnats, House flies, Maggots,

~~Mosquitoes~~, Mushroom Flies, Olive Fruit Flies, Onion Maggots, Shore flies, Vinegar Flies, Whiteflies,

**“Worms” Slugs and Caterpillars:** Armyworms, Beet Armyworms, Cross-striped Cabbageworms, Cankerworms, Caterpillars, Corn Earworms, Eastern Tent Caterpillars, Fire worms, Forest Tent Caterpillars, Fruit worms, Hornworms, Green Fruit Worms, Imported Cabbageworms, Navel Orange worms, Potato Tuber worms, Saltmarsh caterpillars, Slugs Tomato Budworms, Tomato Fruit worms, Tomato Hornworms, Tomato pinworms, Webworms,

**“Bugs” Scale and Mites (excluding dust, scabies, and dog follicle mites and chiggers) :** Billbugs, Box Elder Bugs, Clover Mites, Eriophyid Mites, Fleas, Grain Mites, Grape Mealy bugs, Green bugs, Harlequin Bugs, Lace Bugs, Leaf-footed plant bugs, Mealy Bugs, Proba bugs, Tarnished Plant Bugs, ~~Ticks~~, Tomato bugs, Tomato Russet Mite, Scales, Soft Scales, Squash bugs, Stink Bugs, Southern chinch bugs, Sow bugs, Vine mealy bugs,

**Aphids, Borers, Leafhoppers, Leaf miners, loopers and other insects as listed:** Ants (excluding Fire, Harvester, Carpenter and Pharaoh ants), Aphids, , Armored Scales, Bermudagrass Mirids, Branch and Twig Borers, Cabbage Loopers, Cadelles, Chalcids, Cheese Skippers, Cockroaches, Crickets, Earwigs, European Corn Borer, Fruit tree Leaf rollers, Garden Symphylan, Glassy Winged Sharpshooters, Grape Leafhoppers, , Grasshoppers, Green Peach Aphids, Greenhouse Thrips, Heliothis spp., Katydid, , Leafhoppers, Leafminers, Leafrollers, Leaf tiers, Loopers, Lygus, Millipedes, Mole crickets, Orange Tortrix, Pacific flatheaded borers, Pear Psyllids, Potato Leafhoppers, Psyllids, Sharpshooters, Shot hole borers, Silverfish, Skippers, Springtails, Tobacco Thrips.

### ACTIVE INGREDIENT:

Diatomaceous Earth, chemical composition consisting of:

Silicon Dioxide .....85.0%

Other oxides and moisture.....15.0%

**Total**.....100.0%

KEEP OUT OF REACH OF CHILDREN  
**CAUTION**

**Commented [CD6]:** These categories should be rethought as indicated in the Master Label.



## FIRST AID

**If In Eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Call 1-800-222-1222**

## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes. Use adequate ventilation and avoid breathing dust. Wear a suitable dust mask approved by NIOSH/MSHA when using this product during prolonged exposure.

## DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

## PRODUCT INFORMATION

This product is a ready-to-use insecticide which provides effective control against crawling and listed flying insects, pests and mites (excluding dust, scabies, and dog follicle mites and chiggers). Surfaces treated with DIAFIL® 610 will control flying insects if they land on the treated surface. DIAFIL® 610 is a mechanical insect killer. Insects cannot become immune to its action. Insects come in contact or ingest this powder and die within 48 hours.

## APPLICATION

This product is for use in and around residential, commercial and agricultural buildings, structures and their immediate surroundings, in and around food/feed handling establishments, in and around livestock and poultry houses and may be applied over the top while animals are present, on crops, and stored grain.

DIAFIL® 610 is intended for application using commercially available hand dusters, power dusters or other suitable means for application to areas where insect pests are found. Alternatively, DIAFIL® 610 can be applied as a wettable powder (WP). WP treatments are intended both for indoor and outdoor applications and can be applied in a targeted manner.

**Slurry Mixing:** When a WP application is desired or being utilized, use the following procedure:

### Mixing

1. Fill spray tank using 2/3 of the desired amount of water and add optional non-ionic surfactant according to label rate, and stir.
2. Typical Ratio is 1 lb of DIAFIL® 610 per gallon of water in the total spray mixture. Maximum slurry solids is 1.65 lbs per gallon of water.
3. After DIAFIL® 610 is thoroughly blended add the remaining amount of water and stir.

### Notes:

- Non-ionic surfactants or wetting agents are used to promote adhesion on hydrophobic surfaces.
- It is advised to mix this solution directly prior to spraying and apply the entire batch within 8 hours.
- DIAFIL® 610 will settle if left undisturbed for more than 1 hour, therefore, it is recommended to shake the container prior to restarting the application.

- When proper coverage is obtained, a visible white residue will be apparent on the treated surface.

### POULTRY AND LIVESTOCK

For use in and around Poultry and Livestock housing structures, swine houses, cattle barns, calf hutches, loafing barns, horse stables and pet kennels to control [listed](#) insect pests and mites ([excluding dust, scabies, and dog follicle mites and chiggers](#)). Apply uniformly to infested areas of walls and floors. Pay particular attention to cracks, crevices, bedding, wall voids and around window and door frames. Applications are permitted when animals are present and may be used over the top of animals. Applications are permitted mid-flock while birds are present, over the top of the birds. Do not apply directly to animal feed or watering equipment. Litter should be retreated when replaced and before each new batch of poultry is introduced to the facility. Repeat treatments as necessary to maintain adequate control if Diafil® 610 has been covered with animal waste.

#### Litter Treatment:

Use a handheld, power duster or powder spreader to evenly distribute 4 lbs per 1000 square feet over the litter paying particular attention to the areas underneath feed and watering equipment lines. Applications can be made up to 7.5 lbs per 100 square feet for severe infestations. If litter is greater than 3 inches deep, apply up to an additional 2.5 lbs per 100 square feet per additional inch of litter.

#### Wall Treatment:

Apply as a dry powder OR wettable powder, paying particular attention to cracks and crevices. The amount of product to be applied will vary with the site but should be in the range of 2-5 oz/100 square feet.

### CROP APPLICATIONS

DIAFIL® 610 may be applied as a wettable powder to growing crops to control [listed](#) insect pests and [plant parasitic](#) mites. Typically apply at 15 to 30 lbs per acre. Maximum recommended application is 70lbs per acre. Slurry solids should be adjusted to match the application equipment. Repeat treatments to maintain adequate control in the event of rain. It is advisable to add non-ionic surfactants or wetting agents to promote adhesion on foliage.

### STORED GRAIN

An effective addition for insect pest control, by physical action for suppressing insect damage to stored grain, including barley, buckwheat, corn, oats, rice, rye, sorghum grain, wheat, and mixtures of these grains.

Adjust moisture content of grain to not over 12% by weight and add 1-2 lbs of this product per ton of grain at the point of entry into storage. Up to 7 pounds of this product per ton of grain can be added in the event of severe infestation. Treated grain may be reduced to a lower grade, have reduced flowability and test weight. For best results, treat grain immediately after harvest.

### FOOD AREAS OF FOOD/FEED HANDLING ESTABLISHMENTS

Food/feed handling establishments are places other than private residences in which food/feed is held, processed, prepared or served. Apply DIAFIL® 610 where ~~these listed~~ insect pests may be entering the structure, traveling, breeding or [habitating living](#). Remove or cover all food or feed items in the treatment area before applying product. Treat open spaces below floors, above ceilings, within walls, under stairs, underneath and behind equipment or appliances, around pipes and sinks, in utility closets and around garbage and waste cans. In food handling areas, or areas where food or feed products are prepared or stored, apply as a crack & crevice or spot treatment. As a crack & crevice treatment, apply sparingly into cracks and crevices using equipment designed to place powder into specific

Commented [CD7]: I don't think this is a word.

locations. Limit spot treatments to walls or floors where pests are suspected of hiding. No individual spot treatments should exceed 2 square feet. For best results, apply to dry areas. Repeat treatment on dry surfaces if DIAFIL® 610 has been removed to maintain control of problem insect pests. Apply as a dry powder OR wettable powder in a targeted manner. The amount of product to be applied will vary with the site but should usually be in the range of 2-5 oz/100 square feet.

#### **OTHER USES (INDOOR AND OUTDOOR APPLICATIONS)**

In living areas, make applications in such a manner as to avoid deposits on exposed surfaces or introducing the material into the air. Application as WP will facilitate a targeted application. Treat a small area of the surface to be treated and look for staining or other adverse reactions before making regular application.

To apply DIAFIL® 610 directly into cracks and crevices, use a bulbous duster or other suitable equipment. Apply lightly and uniformly to infested areas. The amount of product to be applied will vary with the site but should usually be in the range of 2-5 oz/100 square feet.

**Indoor use:** Lightly coat a thin layer of DIAFIL® 610 in areas where target pests are found and may hide such as cracks and crevices, behind and beneath refrigerators, cabinets, stoves, garbage cans and in and around sewer pipes and drains, window frames and in attics and basements. Dust insects directly if possible. Repeat treatment if the product is inadvertently removed. The amount of product to be applied will vary with the site but should usually be in the range of 2-5 oz/100 square feet.

**Fleas:** Thoroughly treat floor and bedding in and around pets' sleeping quarters. Treat surrounding cracks and crevices, baseboards, carpeting and wherever fleas are suspected.

**Carpet Beetles:** Dust along baseboards, carpet edges, under carpeting, furniture, in closets and shelving where these insects are seen or suspected.

**Bedbugs:** Dismantle bed. Use DIAFIL® 610 in joints, crevices and where rungs are inserted. See that all interior areas are dusted. Dust mattresses especially folds and edges. All cracks and crevices and around window openings in the bedroom should be treated.

**Outdoor Use:** Lightly coat a thin layer of DIAFIL® 610 in areas where ~~these~~ [listed](#) insect pests are found such as patios, outdoor sills, window and door frames. Apply around foundations, along ant trails and around sewer pipes and drains. Repeat treatment if the product is inadvertently removed. The amount of product to be applied will vary with the site but should usually be in the range of 2-5 oz/100 square feet.

#### **STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage or disposal

**STORAGE:** Store in a cool, dry area

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** **If empty:** Do not reuse this container. Place in trash or offer for recycling if available. **If partly filled:** Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

Manufacturer makes no warranty, expressed or implied, regarding the performance of this product in the absence of control over how it is used.

Net Weight: \_\_\_\_\_ lbs.

EPA Reg. No. 73729-1

EPA Establishment No. 073729-NV-001  
EPA Establishment No. 073729-MEX-002  
Batch Code:

IMERYS MINERALS CALIFORNIA, INC.  
2500 MIGUELITO RD.  
LOMPOC CA 93436

11/8/17

### SUBLABEL B

Primary Brand Name: Diafil 610  
Alternate Brand Name: Celite 610

FOR PEST MANAGEMENT PROFESSIONALS

# Celite® 610

MECHANICAL INSECTICIDE  
(SEE DIAFIL 610 LABEL FOR A FULL LIST OF INSECT PESTS)

### ACTIVE INGREDIENT:

#### ACTIVE INGREDIENT:

Diatomaceous Earth, chemical composition consisting of:

Silicon Dioxide .....	85.0%
Other oxides and moisture.....	15.0%
<b>Total.....</b>	<b>100.0%</b>

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

### FIRST AID

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Call 1-800-222-1222**

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes. Use adequate ventilation and avoid breathing dust. Wear a suitable dust mask approved by NIOSH/MSHA when using this product during prolonged exposure.

#### **DIRECTIONS FOR USE**

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

**This recommendation must be in the possession of the user at the time of pesticide application. Follow all applicable directions, restrictions, Worker Protection Standard requirements, and precautions on the EPA registered label.**

#### **PRODUCT INFORMATION**

Celite® 610 is a ready-to-use insecticide which provides effective control against [listed](#) crawling and flying insect pests and mites [\(excluding dust, scabies, and dog follicle mites and chiggers\)](#)-. It is a mechanical insect killer. Insects cannot become immune to its action.

Insects come in contact or ingest this powder and die within 48 hours.

This package only contains 1 lb of Celite 610 to facilitate simple mixing for application as a wettable powder.

Net weight: 1 lb

FOR PEST MANAGEMENT PROFESSIONALS

## **Celite® 610**

MECHANICAL INSECTICIDE

#### **STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage or disposal.

**STORAGE:** Store in a cool, dry area.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** If empty: Do not reuse this container. Place in trash or offer for recycling if available. If partly filled: Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

#### **WETTABLE POWDER MIXING INSTRUCTIONS PER 1 GALLON CONTAINER**

1. Add about 2/3 gallon of water to the container.
2. Close and shake vigorously for 10-15 seconds to disperse the Celite® 610.
3. Fill the container with the remaining water.
4. Close and shake vigorously for another 10-15 seconds.
5. Carefully decant into handsprayer, pressurize and apply a single, even coat to the target area.

#### **NOTES:**

- A Non-ionic surfactant can be used to promote adhesion onto hydrophobic surfaces.
- It is advised to mix this solution directly prior to spraying and apply the entire batch within 8 hours.
- Celite® 610 will settle if left undisturbed for more than 1 hour, so it is recommended to shake the container prior to restarting application.
- When proper coverage is obtained, a visible white residue will be apparent on the treated surfaces.

Manufacturer makes no warranty, expressed or implied, regarding the performance of this product in the absence of control over how it is used.

**APPLICATIONS:**

Apply in areas where [listed](#) insect pests are found; in and around residential, commercial and agricultural buildings, structures and their immediate surroundings, in and around food/ feed handling establishments, in and around livestock and poultry houses and may be applied over the top while animals are present, in and around swine houses, cattle barns, calf hutches, loafing barns, horse stables, pet kennels, patios, outdoor sills, window, door frames, cracks and crevices, around foundations, along ant trails and around sewer pipes and drains.

Apply in a manner as to avoid introducing the material into the air. The amount of product to be applied will vary with the site but should usually be in the range of 2-5 oz/100 ft<sup>2</sup>.

**LIVESTOCK:** To control Ants ([excluding Fire, Harvester, Carpenter and Pharaoh ants](#)), Spiders, Fleas, House flies, Little House flies, Cockroaches, Mites ([excluding dust, scabies, and dog follicle mites and chiggers](#)), Litter Beetles, Hide Beetles, Earwigs and other [listed](#) insects.

**POULTRY HOUSES:** To control Bedbugs, Mites ([excluding dust, scabies, and dog follicle mites and chiggers](#)), Litter Beetles (Darkling Beetles) and Hide Beetles.

**FOOD/FEED HANDLING ESTABLISHMENTS:** To control Asian Lady Beetles, Boxelder Bugs and Cluster Flies  
**INDOOR USE:** To control Cockroaches, Ants ([excluding Fire, Harvester, Carpenter and Pharaoh ants](#)), Earwigs, Millipedes and Centipedes, Crickets and Silverfish.

**OUTDOOR USE:** To control Cockroaches, Earwigs, Grasshoppers, Ants ([excluding Fire, Harvester, Carpenter and Pharaoh ants](#)), Crickets and other [listed](#) insects.

Net Weight: 1 lb.  
EPA Reg. No. 73729-1  
EPA Establishment No. 073729-MEX-002



IMERYS MINERALS CALIFORNIA, INC.  
2500 Miguelito Rd., Lompoc, CA 93436



The following graphics may appear on the Front Panel or elsewhere on Sublabels



**Commented [CD8]:** This image includes lice and what appears to be a mosquito. This product is not labeled for lice and mosquitoes. This image should be revised.